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ABSTRACT

The article outlines an activity for providing a hands-on opportunity for elementary and middle school science students to study the theory of the earth's crustal change over the past several hundred million years. The theory of continents drifting away from one super continent is presented with the supportive evidence that scientists have uncovered in this century. The evidence includes paleomagnetism and magnetic stripes on the ocean floor; rocks found to be closely correlated by age and location; ancient mountain chains, once connected and now separated; the direction of scratches made by continental glaciers on bedrock; and the close match between the shelf of one continent and that of another. The article describes the procedure and lists the necessary materials for the activity, which is designed to help verify the existence of drifting continents by having students rearrange the land masses into a continental jigsaw puzzle. (TRS)

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CONTINENTAL JIGSAW

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CONTINENTAL JIGSAW

RICHARD H. ORINGER

How do children of the upper elementary and middle school years perceive of changes in the crustal surface features of our planet? The following activity will offer children in this age group an opportunity to visualize, in a "hands-on" fashion, a change in the crustal features of our planet which has occurred over the past several hundred million years.

What did the earth look like 200 million years ago, when the dinosaurs roamed the earth? Did it appear as it does now—seven continents spread over the planet—or did it look different? Many scientists theorize that for several million years there was one supercontinent, called Pangaea—not seven continents as there are now. They believe that, about 200 million years ago, this single land mass began to separate and that these pieces moved about slowly until they reached the places where they are now.

Did you feel the earth drift as you read these words? The theory of drifting continents applies today as well. For example, North America is closer to Asia today than it was last year; the Atlantic Ocean is widening by three or four inches every year; and the Pacific Ocean is becoming narrower by one to two inches a year.

In the past century, scientists from all over the world have been gathering evidence which supports this theory of drifting continents. They have recently been studying

- the close match between the shelf of one continent and that of another;
- the direction of scratches made by continental glaciers on bedrock;
- ancient mountain chains, once connected and now separated;
- rocks found to be closely correlated by age and location; and
- paleomagnetism and the magnetic stripes on the ocean floor—the most important of all the evidence studied.

In the following activity, you will use some of these clues to help you verify the existence of drifting continents.

RICHARD ORINGER is a science teacher at the Albert Leonard Junior High School in New Rochelle, New York, and a graduate student at Teachers College, Columbia University.

Materials

scissors

clear tape

cardboard (8" × 11")

Study the worksheet. It represents eight land masses on our planet which existed millions of years ago: North America, South America, Africa, Europe-Asia, Greenland, India, Antarctica, and Australia. Markings on the land masses indicate various types of evidence or clues to the existence of continental drift. The arrows indicate evidence of glacial scratches in the bedrock of the earth; the areas in black indicate zones of ancient mountain chains; the dotted areas represent rock which is of the same age.

Procedure

With your scissors, cut out the outline of the land masses. Move the land masses together using the evidence described in the introduction. Ask yourself the following questions as you rearrange the land masses:

- Do the land masses fit together like a huge jigsaw puzzle?
- Does the direction of the glacial scratches in the bedrock match between land masses?
- Do the ancient mountain ranges match, and is there a correlation between the rock of one land mass and that of another?

When you have completed the arrangement of the land masses, secure the cutouts to the cardboard, using small pieces of tape. You have completed the continental jigsaw.

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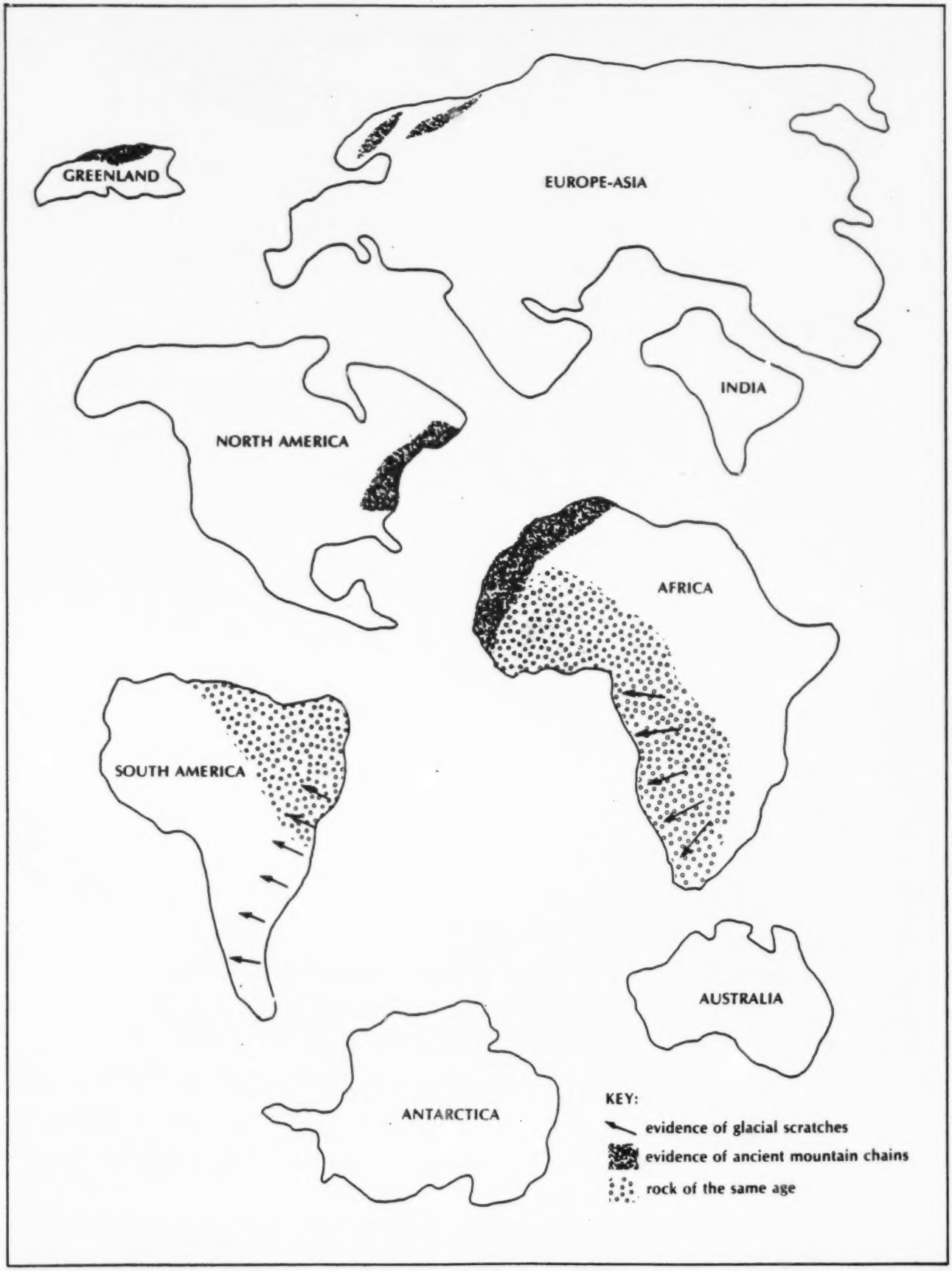
GREENLAND
EUROPE-ASIA
INDIA
NORTH AMERICA
AFRICA
SOUTH AMERICA
AUSTRALIA
ANTARCTICA
KEY:
evidence of glacial scratches
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